

IN THE CLAIMS

Each claim of the present application is set forth below with a parenthetical notation immediately following the claim number indicating the current claim status. The Examiner's entry of the claim amendments, as shown in marked-up form below, under Section 116 is respectfully requested.

1. (CURRENTLY AMENDED) A method for depositing material on a semiconductor wafer, wherein the wafer temperature is maintained within a temperature range, the method comprising:

providing a target comprising an aluminum the material to be deposited;

supporting the wafer in a spaced-apart relation from an upper surface of a chuck, wherein during deposition the wafer is held in position only by gravitational forces urging the wafer against the upper surface;

controlling a chuck temperature during deposition to control the wafer temperature to within the temperature range, wherein a chuck temperature greater than a wafer temperature causes radiant heat flow from the chuck to the wafer; and

depositing the aluminum material from the target onto the wafer during which the wafer temperature is controlled by the chuck temperature to achieve a desired grain orientation of the deposited aluminum material.

2. (CANCELLED)

3. (CANCELLED)

4. (CANCELLED)

5. (PREVIOUSLY PRESENTED) The method of claim 1 further comprising positioning the wafer at a distance from the target such that the wafer temperature exhibits a greater dependence on a chuck temperature than on other heat producing effects during the step of depositing material.

6. (CURRENTLY AMENDED) The method of claim 1 wherein the aluminum material comprises aluminum or an aluminum alloy.

7. (ORIGINAL) The method of claim 1 wherein the temperature range comprises temperatures between about 245° C and 285° C.

8. (PREVIOUSLY PRESENTED) The method of claim 1 wherein the step of controlling the chuck temperature comprises controlling the chuck temperature between about 350° C and 450° C.

9. (PREVIOUSLY PRESENTED) The method of claim 1 further comprising determining a wafer entry temperature prior to the step of depositing, wherein the step of controlling the chuck temperature further comprises controlling the chuck temperature in response to the wafer entry temperature.

10. (CURRENTLY AMENDED) The method of claim 1 wherein the step of depositing further comprises depositing the aluminum material with a <111> crystal orientation on the wafer.

11. (CURRENTLY AMENDED) The method of claim 1 further comprising depositing an underlying layer on the wafer prior to depositing the aluminum material, wherein the underlying layer has a predetermined crystal orientation.

12. (ORIGINAL) The method of claim 11 wherein the underlying layer comprises titanium having a <002> crystal orientation.

13. (CANCELLED)

14. (PREVIOUSLY PRESENTED) The method of claim 1 wherein the step of supporting the wafer further comprises positioning the wafer at a distance of about 45 mm from the target.

15. (CURRENTLY AMENDED) A physical vapor deposition chamber for depositing material on a wafer, wherein a wafer temperature is maintained within a temperature range, comprising:

a target formed from the aluminum material to be deposited on the wafer;

a chuck for supporting the wafer, wherein while depositing the aluminum material on the wafer, wherein the wafer is urged against an upper surface of the chuck solely by gravitational forces exerted by the wafer against the chuck;

a chuck heater; and

a controller for controlling the chuck heater, wherein the wafer is spaced apart from the target such that during deposition of the target aluminum material on the wafer

the wafer temperature is maintained within the temperature range in response to heat flow from the chuck to the wafer.

16. (ORIGINAL) The physical vapor deposition chamber of claim 15 wherein the wafer is heated by radiant heat flow from the chuck to the wafer.

17. (ORIGINAL) The physical vapor deposition chamber of claim 15 wherein the wafer temperature is substantially determined by the chuck temperature.

18. (PREVIOUSLY PRESENTED) The physical vapor deposition chamber of claim 15 wherein the wafer and the target are disposed in a spaced-apart relation to permit a chuck temperature, as controlled by the chuck heater, to substantially control the wafer temperature.

19. (CANCELLED)

20. (ORIGINAL) The physical vapor deposition chamber of claim 15 further comprising a pedestal cover overlying the chuck, wherein the pedestal cover further comprises a plurality of pads on an upper surface thereof, and wherein the wafer is disposed on the plurality of pads.

21. (CURRENTLY AMENDED) The physical vapor deposition chamber of claim 15 wherein the aluminum material comprises aluminum or an aluminum alloy.

22. (ORIGINAL) The physical vapor deposition chamber of claim 15 wherein the temperature range is between about 245° C and 285° C.

23. (ORIGINAL) The physical vapor deposition chamber of claim 15 wherein the controller determines a chuck temperature in a range of between about 350° C and 450° C.

24. (ORIGINAL) The physical vapor deposition chamber of claim 15 further comprising a temperature measuring device for determining the wafer temperature, wherein the controller is responsive to the wafer temperature for controlling the chuck heater in response thereto.

25. (CURRENTLY AMENDED) The physical vapor deposition chamber of claim 15 wherein the deposited aluminum material has a substantially <111> crystal orientation.

26. (CURRENTLY AMENDED) The physical vapor deposition chamber of claim 15 wherein the deposited aluminum material exhibits a desired grain orientation.

27. (CANCELLED)

28. (CURRENTLY AMENDED) The method of claim 27 1 wherein the step of supporting the wafer on the chuck further comprises supporting the wafer on the chuck without use of a clamp or an electrostatic chuck.

29. (CURRENTLY AMENDED) The method of claim 1 wherein the wafer is spaced apart from the target at a distance such that during the process of depositing the aluminum material the chuck temperature controls the wafer temperature within the temperature range notwithstanding the presence of other heat sources during the process of depositing the material.

30. (PREVIOUSLY PRESENTED) The method of claim 1 wherein the step of supporting comprises supporting the wafer in a spaced apart relation from heating and cooling surfaces of the chuck.

31. (PREVIOUSLY PRESENTED) The method of claim 1 further comprising determining a wafer temperature during the step of depositing and controlling the chuck temperature in response to the wafer temperature.